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Christmas

"PUT a bit of Christmas in 'em," said Sam Weller, directing the Fat Boy in the last touches of Mr. Wardle's table. And it will be recalled how the lad seized this opportunity to purloin, for his own particular behoof, the largest of the mince pies.

It is safe to assume that this obese youth never entertained the possibility of attempting to enter the profession—though he was a good hand at driving a pony—yet the affair of the mince pie has, possibly, its moral. At this time veterinary surgeons may be excused a modest satisfaction at their share in making possible, by their art and science, the feasts of Christmas, and even make off, when no one is looking, with that special morsel from the breast of the turkey that is, surely, their birthright.

Animals have had, from the earliest times, an especial link with Christmas. From the sheep of the first Christian story, to the reindeer and the snow goose of fable, animals have been conspicuous in Yuletide history and legend. Those who tended them have been held, through the centuries, in esteem, and it is proper to reflect with satisfaction on more than two millennia of what we now call veterinary surgery. The numberless domesticated animals—without which mankind could hardly support a tolerable existence—their value and their productivity are owed, at least in part, to the veterinarian; and it could be wished that the community were better informed, and thus more appreciative of, the services so long rendered.

A past President of this Association observed that mankind had two needs fundamental to continued existence—food and shelter—and that in so far as the first is concerned it is the privilege of the profession to help in providing it. Not for ourselves only, it may be suggested, for the science taught and practised in these islands, and in other English-speaking communities, has been extended the world over, and even while these words are read workers in distant countries are striving to increase the production, and safeguard the health, of flocks and herds upon which backward communities depend. The Reports of Directors of Veterinary Services, published in these columns from time to time, give some indication of what is being done, and their colleagues at home may well read such Reports with admiration and legitimate pride.

But Christmas is, above all, a religious festival, and even those who do not directly associate themselves with a Christian communion must revere its ethic, and find a never-failing spell in the Apostolic description of the first Christmas morning. That it was associated with the so-called lower creation can hardly fail to move those whose working days are spent in the same sphere. In a modern world, some of whose changes, at least, are hardly to be called progress, there is a peculiar satisfaction in vocational employment, and that satisfaction belongs by right to certain callings of which veterinary surgery is one.

It may be, through the vagaries of the post office, of which our readers have cause to complain from time to time, that this issue of THE VETERINARY RECORD will not be received on Christmas Eve, its publication date. But whether it is received in time or no, we wish to offer to all members of the profession the traditional good wish and greeting, "God rest ye merry, gentlemen."

Hookworm Disease in British Cattle

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BUNOSTOMUM phlebotomum (Railliet, 1900), the hookworm of cattle, is responsible for serious infestation in Nigeria (Sprent, 1946a, b), Australia (Roberts, 1939), the U.S.A. (Mayhew, 1939) and Europe (Hutyra, Marek & Manninger, 1949). In this country the parasite is generally found in small numbers as compared with the usual heavier infestation with the commoner intestinal nematodes, but it would appear to be unrecognised as a single cause of clinical disease. Experience at this laboratory, however, indicates that the parasite may be more important than is generally supposed and an account is given of an outbreak of disease attributed to its presence, together with a review of the more important publications concerning its occurrence in other parts of the world.

Particulars of the Outbreak

This occurred during March, 1953, on a Gloucestershire farm in a group of 13 calves, which were maintained in an open straw yard, feeding and bedding being the only parts under cover. One side of the yard was particularly wet, and in that part there was a scanty growth of grass.

The calves were placed in the yard after weaning and were given an adequate diet of hay, swedes, crushed oats and linseed cake. During the four months succeeding entry into the yard six calves died. Faeces samples examined at the time by a routine laboratory service revealed a low or negative egg count that seemed to rule out parasitism.

One of the calves became available for *post-mortem* examination and showed anaemia, oedema, cachexia, an abomasal burden of 100 *Trichostrongylus axei* and a small intestinal burden of 2080 *Bunostomum phlebotomum* and 200 *Nematodirus* spp. A rectal sample of faeces contained 400 strongyle eggs per gramme. The presence of so large a number of hookworms together with the evidence of anaemia and cachexia suggested that this animal had died from the effects of *B. phlebotomum* infestation.

Of the remaining seven animals one was weak, scouring and had a slight normocytic anaemia, showing 4.01 × 10^6 R.B.C. per c.mm. and 4.2 grammes haemoglobin per cent. The other six were obviously ill and blood examination showed low normal haemoglobin contents ranging from 6.6 to 10.1 grammes per cent.

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Treatment

In order to assess the effect of various drugs, six of the survivors were grouped in pairs and treated respectively with phenothiazine (20 grammes per 100 lb. bodyweight), tetrachlorethylene (10 ml. per 100 lb. bodyweight) and 300 mg. of saccharated iron administered parenterally. Each treatment was repeated four times at intervals of 14 days. The remaining animal was considered to be too ill to receive anthelmintic treatment and received large doses of iron parenterally. Improvement was observed in all of the groups soon after the commencement of treatment and the blood picture was observed to return to normal after the fourth treatment.

All the pre-treatment egg counts were low. The severely affected animal showed 500 eggs per gramme and the remaining six ranged between 40 to 160 eggs per gramme. Cultures were made in order to examine the infective larvae which examination revealed that 95 per cent. were *Bunostomum* spp., the remaining five per cent. being *Trichostrongylus* spp. The egg counts fell following the treatment, a slight rise that occurred after the third treatment being traced by faeces culture to *Ostertagia* and *Trichostrongylus* spp.

Soil and grass samples from the wet area of the yard were examined by the Baermann technique. Of the infective larvae obtained, *Bunostomum* spp. were found to predominate.

Discussion

Although only a single outbreak of bunostomiasis was encountered it indicates that the disease exists in this country and it is suggested that it may not be uncommon, although it remains unrecognised. This belief is supported by the findings of Parnell, Dunn & MacIntosh (1953) who demonstrated that hookworms are common in Scottish hill cattle and found that they may account for 58 per cent. of larvae recovered from the faeces of yearlings and two-year-olds.

Several points of interest were observed in relation to the development of the disease. Firstly, the unhygienic area in the yard certainly favoured infestation. The infective larvae of hookworms are skin penetrators, and given moisture for development may infect animals even though feeding arrangements minimise or eliminate infestation by ingestion. The relative absence or other abomasal or intestinal parasites, which are not skin penetrators, would suggest that infestation by ingestion was minimal and

that the feeding arrangements in the yard were adequate to prevent infestation. Secondly, the diet of the animals was good and this probably compensated in part for the severe anaemia-producing effect of the hookworms. The relationship between diet and hookworm anaemia has been demonstrated by Lucker & Neumayer (1947) in that a sufficient diet greatly mitigates the anaemia. In this outbreak it was obvious that the diet was not fully compensatory since six deaths occurred and had the diet been poor there is little doubt that all animals would have died earlier.

A third point of interest was the low faecal egg count in several of the animals. The female *Bunostomum* is a prolific egg layer (Sprent, 1946a), however, relatively few worms are required to produce severe clinical symptoms and consequently significant egg counts are relatively low. Roberts (1939) has shown that a fatal infestation of 2,250 *B. phlebotomum* is represented by an egg count of 400 to 800 eggs per gramme of faeces thus confirming very closely with the counts of 400 and 500 observed in two of the calves at present reported. In addition the prepatent period of *B. phlebotomum* is comparatively long, some 30 to 56 days (Sprent, 1946c), throughout which period the immature stages are voracious bloodsuckers and their presence cannot be detected by egg counts. Mayhew (1948) has in fact shown that the symptoms of hookworm disease are most severe when the majority of the worms are in the prepatent period of development and under these conditions low egg counts are to be expected. Consequently it is to be remembered that a low faeces egg count in the bovine animal does not necessarily eliminate a diagnosis of intestinal parasitism.

In treatment it is observed that either removal of the helminths or the correction of the anaemia results in a clinical cure. This agrees with observation in human medicine. In some cases iron therapy may be more urgent than the use of anthelmintics.

Summary

1. An outbreak of hookworm disease in British cattle is recorded.

2. Either anthelmintic therapy or iron therapy are effective treatments.

3. The outbreak occurred in yarded cattle.

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Ischaemic or Volkmann's Contracture in the Dog with a Palliative Operation in One Case

BY

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REFERENCE to Volkmann's or ischaemic contracture or paralysis has never been encountered by the author in the veterinary literature—yet it occurs in the dog. The extreme type of case is rare, but mild cases are not uncommon.

Review of the Literature

The following are the views of Wiles (1949) concerning the condition in man: Temporary arterial occlusion in any limb at any level and from any cause may produce irreversible changes in the muscles, which die and are subsequently replaced by fibrous tissue. Volkmann postulated that the syndrome was due to the interruption of the arterial blood supply, but later it was attributed to venous occlusion. Subsequently the former view was confirmed. Limited collateral circulation is sufficient as a rule to maintain the vitality of other structures. The brachial artery is affected more often than any other and the upper limb more often than the lower. Tight plaster is unlikely to be a cause of arterial occlusion, but may be a contributory factor. Besides coldness of the limb, the first symptom may be pain, but this may be delayed for a day or two or remain absent. Whenever the circulation is found to be impaired, steps must be taken at once to restore it. Continuous traction is beneficial if an established contracture is moderate. A very severe contraction is difficult to treat surgically. Max Page's muscle slide is used in which the common origin of the flexor muscles of the forearm is detached and moved distally, as is Garrè's operation, where radius and ulna are shortened to increase the relative length of the muscles. These operations are important in an attempt to straighten the fingers, which may be contracted claw-like on to the palm of the hand.

Watson-Jones (1943) has views similar to those cited. He adds that total arterial occlusion for 24 hours leads to gangrene, while if it is not complete or for a shorter period, then it leads to contracture. In the majority of cases ischaemic contracture is due to contusion of an artery, traumatic arterial spasm, thrombosis or embolism, perforation or rupture, aneurism or artero-venous fistula, or any arterial injury or sequel of an injury, which reduces the blood supply of the muscles of the limb. Supracondylar (Colles's) fracture of the humerus may cause kinking of the brachial artery and the disappearance of the radial pulse.

Morbid Anatomy

Watson-Jones describes the pathology as follows: The effect of depriving a muscle of blood is to cause necrosis and the formation of a muscle sequestrum. The general contour is preserved, but the muscle is dead. Individual muscle fibres can be recognised, but there are no living nuclei in the muscles or inter-

fibrillary tissue. Surrounding necrotic areas there is phagocytic and fibroblastic cellular activity. Fibrosis eventually proceeds from without inwards and replaces the muscle with fibrous tissue, which contracts and shortens. Injury to nerves might take place at the same time as injury to the artery. Even when there is no gross damage to nerve trunks, ischaemia may produce nerve paralysis.

It is patent that the ischaemic contracture can be very extensive and disabling as well as mild and unobtrusive. The case report of a very severe Volkmann's contracture in a dog follows. The mild type of case will be referred to later.

Case Report

The subject was a two-year-old Ridgeback dog in good condition. There was a comminuted fracture extending from the midshaft of the humerus to the supracondylar area. The leg was immobilised by means of a modified Thomas splint, which means attaching the distal end of the splint to a wire embedded in a plaster cast around the distal forearm and carpus. The case was discharged from the hospital with instructions to return it after three weeks, or earlier if anything untoward became evident.

When the dog was returned after the specified time, the splint was removed. The callus was very firm and strong, but rather big. The limb distal to the fracture was atrophied and had impaired voluntary mobility. The owner was advised to massage the limb regularly and encourage activity. When seen some months later, the only improvement was in the agility of the dog. The flexor and extensor muscles of the carpus and metacarpus were shrunken and hard with limited contractility. Full extension of the carpus and the joints distal to it was impossible. There was a slight supination, so that the outside of the fifth toe and the tips of the two nearest to it came into contact with the ground while walking. When the contraction had come to rest six months after the fracture, the biceps and the triceps group of muscles were well developed and functioned as near to normal as was permitted by the callus, *i.e.*, flexion and extension of the shoulder and elbow were satisfactory. Distal to the elbow all the muscles were atrophied, hard and of limited contractility. When the animal attempted to use the limb, the flexor and extensor tendons stood out like cords. The carpus could only be extended three-quarters of the full range and the toes were contracted on to the volar pad. The supination of the metatarsus was more pronounced than before with a corresponding effect on the abnormal weight bearing surface as observed previously. As the leg was of very limited use to the animal, a tendon lengthening operation was suggested to the owner and agreed to.

The Operation

On the ventral aspect the part between the carpal and volar pads was shaved and prepared for operation. Under general anaesthesia a tourniquet was applied above the carpus. An incision was made over the third metacarpal from close to the proximal pad to near the volar pad. It was deepened very carefully until the superficial venous arch was identified. By means of a blunt instrument it was pushed out of the way proximally. By blunt dissection the skin with as much fascia as possible adherent, was separated from the structures lying on the second to fifth metacarpals. The ulnar artery with some of its branches was to be found under the proximal half of the wound. The volar interosseous artery with some of its ramifications occupied almost the same relative position with regard to the fourth and fifth metacarpals and formed the deep volar arch with the small radial artery, which accompanied the first metacarpal. The more important terminal branches of the ulnar and median nerves followed the arteries. Under the distal half of the wound these structures had arranged themselves between the metacarpals, making access to the flexor tendons in this region easy without risk of doing damage to the blood or nerve supply. These tendons could also be reached through the one skin wound, as it had been made long for this purpose.

To lengthen the tendons the best way was by cutting half-way into the width of the tendon, then down its length for the requisite distance and out through the other half. The relevant toe was then straightened, the tendon halves allowed to slide alongside each other and were joined in the new position with chromic catgut on an atraumatic needle. It was decided that the tendons of the superficial flexor of the second and fifth toes were too slender to offer hope of successful lengthening. They were simply divided. The lengthening was then carried out on the superficial flexor tendons of the two remaining big toes and on all the deep flexor tendons of the four toes. It stands to reason that, after cutting the tendons of the same toe suitably, first the deep and then the superficial tendon were joined before passing on to the next toe. The tourniquet was then loosened to be sure no bleeding points existed, the fascia was approximated by continuous catgut suture and the skin closed in the usual manner with silk. After the operation the carpus and the toes could be extended fully, in the former instance, apparently, because contraction of the *M. flexor carpi ulnaris* and *M. abductor digiti quinti* had not been severe enough to prevent extension of the carpus without the support of the other contracted flexor tendons. Only gauze bandages were used for post-operative dressings.

Result

The operation was justified by the results as the dog was enabled to bring all his pads into contact with the ground while standing. Movement still remained very clumsy as a result of the loss of most of the muscle power. Flexion and extension of the carpus and the joints of the manus were facilitated by the vigorous use of the flexors and extensors of the shoulder and elbow, the swinging of the limb thus induced aiding the weak, partly fibrosed muscles.

The muscle slide of Max Page and the osteotomy of Garrè may have their use in contracture in the dog, but the simpler intervention just described accomplished as much as the others would have done in the dog. It is likely that the previous two operations are superior, where the more specialised hand of man is involved.

Discussion

It is not uncommon to see a dog with permanent atrophy of certain muscles after fracture of a limb. Such atrophy is sometimes accompanied by firmness or hardness of the muscles. The wasting can often not be explained solely in terms of nerve paralysis, disalignment of the bones, excessive callus formation or similar condition causing atrophy through partial disuse. It is suggested that some of these cases represent a fairly mild form of ischaemic fibrosis. In contrast to man, this appears to be more common in the pelvic than in the thoracic limb. A possible explanation is that in man the femoral artery is an end artery. Prolonged cessation of blood in this artery leads inevitably to gangrene of the leg. In the dog the collateral circulation is so good that this sequel is prevented and therefore only death of muscle fibres and perhaps nerve endings may result.

The last mentioned unfortunate sequel was seen post-operatively in two canine cases referred for intramedullary pinning a month after fracture of the femur resulted in fibrous union. Very extensive dissection had to be done to liberate the fractured ends from the fibrous callus. Shortening of the leg was well established by then. In order to prevent too much difference in the length of the two hind legs, the femur was pinned, while the surrounding structures were under considerable tension. The leg was encased in a spica and the case sent home. No untoward sequelae were apparent during convalescence, but the leg did not regain mobility after the plaster and the pin were removed. Eventually the leg was stiff with the joints in semi-extension. The muscles of the thigh were hard and fibrous and were responsible for the rigidity of the limb. Fibrosis appeared to be less pronounced below the tibio-femoral joint and there was no contraction of the toes. Trauma to the femoral artery and possibly to some branches or the stretching of the artery could have caused arterio-spasm with unfortunate results.

It is clear that it is essential for the clinician to pay particular attention to the circulation in any case involving trauma of the limbs, so that he can take remedial steps in time if necessary. Up to now sufficient emphasis has not been given to this point in works on veterinary surgery.

Summary

(1) Volkmann's or ischaemic contracture is reported in the dog apparently for the first time.

(2) A palliative tendon lengthening operation is described in one case.

(3) Reference is made to the condition in man.

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Brucellosis : a Note on the Relationship Between the Milk Ring Test Results and the Size and Disparity in Size of the Fat Globules

BY

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SINCE its introduction by Fleischhauer in 1937, the Ring test has been described as a simple agglutination test depending essentially on the presence of agglutinins in the milk. The agglutinated bacteria adhere to the fat droplets and are carried to the top, forming either a blue ring on the decolourised milk column when milk from an infected animal is tested, or the white ring on top of blue milk when milk from a non-infected animal is tested. Some workers describe the Ring test as a Schern-Gorlich reaction; that is, as a simple filtration process, while others conclude that the test is the combination of antigen-antibody-fat globule attachment. de Moulin (1951) reported experiments suggesting that the stained bacteria were attracted to the fat globules by antibody adsorbed to the protein-membrane surrounding them. He was of the opinion that the reaction, when the test was carried out in the normal way, was not the result of a mechanism similar to that of the Schern-Gorlich reaction.

The problems of false positive and false negative Ring test results were considered by Christiansen (1948), Holm *et al.* (1950), Huddleston & Carillo (1949) and others. Such reactions may be obtained when samples are taken from individual animals, from freshly calved or drying-off cows, and from cows infected with mastitis. False positive results may also be seen when aged milk is tested or when non-specific antigen is used. Bruhn (1948), in discussing the negative Ring test results obtained with milk from animals showing strongly positive blood agglutination tests, concluded that they were the result of lack of cream rising capacity. Holm observed agglutination inhibiting factors in some milks from animals with a high blood titre.

It is also noted at Weybridge that milks from some known infected animals show consistently negative Ring test results but are positive (at the same time) to the Plate test. In order to throw further light on this somewhat serious limitation in the use of the Ring test it was decided to carry out an analysis of such milks and to compare the findings with the analysis of milks which reacted normally in the Ring test.

It is seen from the Table that neither fat content nor creaming ability was directly correlated with the results of the Ring test and therefore the failure of milk from known infected cows to give a positive result cannot be ascribed to either of these factors alone. It was, however, decided to examine the size of fat globules as well, because they take an active part in cream formation and consequently in the Ring test, in that agglutinated bacteria are carried to the top by these globules.

The creaming test was carried out at 15° C. (a preliminary test had shown little creaming at 37° C.) in a 100 ml. measuring cylinder filled with milk to the 100 ml. mark and read after 3 and 24 hours. The fat globules were measured by micrometer slide and eye piece.

MILKS POSITIVE TO THE RING TEST

Sample	Fat per cent.	S.N.F. per cent.	Cream volume 3 hr.	Cream volume 21 hr.	Fat per cent. in cream
1	5·10	8·78	3	8·5	12·8
2	4·40	8·83	3	6	13·7
3	4·50	8·06	2·5	6	11·7
4	5·22	9·02	7	12	25·7
5	2·48	8·21	5	6	not done
6	3·58	8·12	6·5	9·5	19·6
7	5·28	8·24	1	5	10·3

MILKS NEGATIVE TO THE RING TEST

1	6·80	8·81	1	5	9·9
2	4·48	8·68	1	7	11·9
3	3·45	8·65	1	2	not done
4	6·55	8·47	1	6	15·6
5	5·00	6·90	2·5	9	23·1
6	4·35	8·71	3	6	6·8
7	4·88	8·27	6	9	18·3

The fat globules of milk which gave the expected positive results by the Ring test were of a size varying from 5 to 7 μ, with a fair number of larger ones. Disparity in the size of fat globules was a marked feature of these milks. The size of fat globules of milks which did not give the expected positive results were somewhat smaller, about 4 μ, with a few larger ones; and the disparity in the size was much less. The difference in the size-ranges of the fat globules of these two groups of milk was clearly seen with the naked eye, although the distribution of large fat globules varied from milk to milk. It appears that positive milks with fat globules showing marked differences in size were invariably positive to the Ring test, and milks with fat globules of more uniform and predominantly a smaller size were constantly negative to the Ring test. It is suggested that agglutinated or sensitised bacteria may be attracted by small fat globules more readily than by larger ones; but because small globules possess the inhibiting or delaying influence in the rising of cream, the Ring test remains negative. If the antigen is added to antibody containing milk which has globules of various sizes, then agglutination takes place, the agglutinated bacteria collect on the small fat globules and are taken to the top by larger ones, giving rise to the coloured cream ring, *i.e.*, a positive Ring test. If on the other hand, the antigen is added to milk containing antibodies and fat globules uniformly smaller (and with the disparity in the size reduced), the agglutinated bacteria collect on the smaller globules; but due to their slow movement and the lack of larger globules, they fail to rise and only a few larger fat globules present near the top of the tube form a narrow white cream ring, *i.e.*, the Ring test result is negative. It should also be borne in mind that the Ring test is read after half an hour of incubation at 37° C. There is no doubt that the short time and unfavourable temperature hinder satisfactory cream formation.

The above findings, based on the theory of cream formation, might partly explain the phenomena encountered when goat's milk and homogenised milk are subjected to the Ring test. The fat globules of goat's milk are much smaller than those of cow's milk. It is often necessary to wait 6 to 12 hours for a positive Ring test reaction to appear and it is not infrequent to see the ring formed under the white cream ring. Incidentally, this has also been observed with some bovine milks. In some milks there are flakes of agglutinated bacteria scattered in the milk throughout the tube. Although it is realised that the above results, which were obtained with only a small number of milks, cannot be accepted as sufficient evidence to explain all the Ring test negative results given with positive milk, it is concluded that there is some relation between the Ring test and the size and relative size of fat globules.

Summary

The importance of the size and disparity in size of fat globules in relation to the Ring test is examined and discussed.

Milks from infected cows were:—

1. Constantly negative when the fat globules were of uniform and predominantly small size;

2. Invariably positive when the fat globules showed a marked difference in size.

These findings, based on the theory of cream formation, may partly explain the occurrence of false-negative Ring test results.

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FOOT-AND-MOUTH DISEASE

The following note has been received as we go to press:—

Foot-and-mouth disease has been confirmed among cattle at COOLING, Kent.

An area extending for approximately 10 miles around the infected premises has been declared to be an Infected Area.

Animals may not be moved in the Area without a licence and the holding of markets in the Area is restricted. An earlier note on foot-and-mouth disease infected areas appears on page 1136.

Controlled Tests of Tetrachlorethylene as an Anthelmintic Against *Trichostrongylus axei* in Sheep

BY

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INTEREST in tetrachlorethylene as an anthelmintic for sheep has been stimulated within recent years in this country, by reports of the indifferent action of phenothiazine in certain outbreaks of parasitic gastro-enteritis. A study of the results reported by previous workers showed that estimations of the efficacy of tetrachlorethylene have been based very largely on a comparison of pre-treatment and post-treatment egg counts. This method of assessment can be misleading since some anthelmintics have the property of depressing egg laying by worms resulting in a low post-treatment egg count, even when large numbers of worms remain in the animal after treatment. Where worm counts have been used to assess the anthelmintic value of tetrachlorethylene the results have revealed low, or at best variable, efficiency. It was, therefore, thought advisable to carry out a small controlled test of the drug and to include in the trial for comparison, one sheep treated with phenothiazine. The results of the trial are recorded in this paper.

Experimental Methods

Seven lambs approximately four months of age were artificially infested with *Trichostrongylus axei* by administering 4,500 infective larvae daily until a total of 63,000 had been given to each lamb. The resulting infestation was superimposed on a light infestation of trichostrongylid worms already present in the lambs, which had not been maintained in the isolation necessary to keep them completely worm-free. Four weeks after the last dose of larvae had been given, the lambs were treated with anthelmintic drugs. Two were each given 2.5 c.c. of tetrachlorethylene in a gelatin capsule, two others were each given 5 c.c. of tetrachlorethylene in gelatin capsules, a fifth was given six five-gramme tablets of phenothiazine, whilst the last two were left untreated as controls. One week after treatment the lambs were killed for *post-mortem* examination. The abomasum and small intestine were removed and examined for the presence of worms using the usual dilution technique. Egg counts were also carried out both before treatment and after treatment, although the absence of faeces in the rectum of certain sheep at the critical time resulted in gaps in this section of the data.

Results

The results are given in tabular form, at the top of the adjoining column:—

No. of lamb	Treatment given	Pre-treatment egg count	Egg count at time of P.M.	No. of *T. axei* in abomasum at P.M.
3958	2.5 c.c. tetrachlorethylene	3,100	343	35,000
3962	2.5 c.c. tetrachlorethylene	8,400	2,100	44,000
3961	5 c.c. tetrachlorethylene	13,000	-	28,300
3827	5 c.c. tetrachlorethylene	3,900	-	58,800
3967	30 grammes phenothiazine	15,800	56	100
3957	untreated control	8,200	-	35,000
3964	untreated control	-	2,100	30,250

Discussion

Tetrachlorethylene appears to have been first tested as an anthelmintic for sheep by Schlingman (1926) who concluded it was effective against stomach worms. Later Pécard (1932) using doses of 2 c.c., recorded high efficiency against trichostrongylid worms in sheep; assessing his results by means of faecal egg counts. Clunies Ross & Gordon (1935) demonstrated that prior starvation had no effect on the anthelmintic efficiency of tetrachlorethylene, but even after repetition of the treatment were only able to achieve low efficiency against *Haemonchus contortus* in sheep. The results of this trial were based on a comparison of the worm burdens of treated and control sheep at *post-mortem* examination and the inactivity of the drug was considered by the authors to result from its failure to pass direct to the abomasum without first passing through the fore-stomachs. Later, Gordon & Whitten (1940) used a copper sulphate drench to stimulate closure of the oesophageal groove before administering tetrachlorethylene emulsion, and on the basis of reduction of egg count concluded it was highly efficient. Ortlepp & Mönnig (1936) also used tetrachlorethylene successfully for the elimination of trichostrongylid worms from sheep, basing their results chiefly on a comparison of pre- and post-treatment egg counts. However, in six sheep where *post-mortem* examinations were carried out, variable results were observed after a single treatment with the drug, three sheep being freed from worms, but three others remained heavily infested. In this series of experiments, Ortlepp & Mönnig gave a drench of copper sulphate before the tetrachlorethylene in an effort to ensure that the latter passed directly into the abomasum. Following this work Mönnig & Ortlepp (1939) devel-

oped an emulsion of tetrachlorethylene for use in sheep and various forms of tetrachlorethylene emulsion have been used in South Africa in recent years.

The majority of previous workers have, therefore, concluded that tetrachlorethylene is an efficient anthelmintic for sheep and it was somewhat surprising on that account to find that the present trial showed it to be extremely inefficient. Reference to previous work shows, however, that most workers reporting good results assessed the efficacy of the drug by a comparison of pre- and post-treatment egg counts. Unfortunately, there are gaps in the egg count records in the present experiment, but those that are available show that treatment with tetrachlorethylene results in a distinct fall in the egg count of treated sheep from which it would be concluded that the anthelmintic had been highly efficient. Reference to data of the worm burdens of treated and control sheep shows this conclusion to be fallacious, for the worm burden of the treated sheep was as high as that of the controls. The post-treatment fall in egg count is undoubtedly referable to inhibition of egg production by the female worms, a property of anthelmintics which appears first to have been observed by Mhaskar (1924) who demonstrated that oil of chenopodium could inhibit egg production of human hookworms for as long as 12 days. Faecal egg counts are clearly an unreliable method of assessing the value of an anthelmintic until a critical or controlled test has first been used to demonstrate its efficiency. Ross & Gordon (1935) who also assessed their results on the basis of worm counts also found tetrachlorethylene to be of low efficiency.

Several previous workers have employed a drench of copper sulphate prior to the tetrachlorethylene for purposes of ensuring that the latter passes into the abomasum without first entering the fore-stomachs, and variable results have been blamed on the failure of the copper sulphate to stimulate closure of the oesophageal groove in all instances (Gordon & Whitten, 1940). In the present trial copper sulphate was not employed, since its use is not customary in practice in this country before the administration of tetrachlorethylene.

By contrast, however, phenothiazine is shown to be completely effective, the lamb treated with this drug having only 100 worms present at *post-mortem* examination compared with 30,000 in the controls. This result is in conformity with other results obtained by the writer, Gibson (1949 and 1951), and is supported by the experience of many other workers.

Although the present trial only involves a few animals, the results are clear cut and it seems safe to conclude that tetrachlorethylene given in gelatin capsules to sheep is quite ineffective against *T. axei* and its use as an alternative to phenothiazine cannot be justified.

Summary

A small controlled test of tetrachlorethylene was carried out using seven lambs specially infected with *T. axei*, using the same number of larvae for each lamb. Two lambs were given 2.5 c.c. of tetrachlorethylene in gelatin capsule, two others 5 c.c., and two were left as untreated controls. The seventh received 30 grammes of phenothiazine for comparison. The results were assessed on the basis of worm counts carried out one week after treatment and showed tetrachlorethylene to be completely ineffective against *T. axei*, but confirm the efficacy of phenothiazine. The comparison of pre- and post-treatment faecal egg counts showed how misleading these can be in assessing the efficacy of an anthelmintic. The post-treatment drop in egg count shown by the animals treated with tetrachlorethylene was undoubtedly referable to inhibition of egg production by the worms and not to their elimination.

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BEVERLEY CATTLE MARKET

It will be of interest to members of the profession to know that as a result of some very strenuous endeavours and thoughtful planning by the Markets Committee of Beverley, the Cattle Market has been reconstructed and modernised at a cost of £30,000. The fact that the Chairman of the Markets Committee is Councillor P. D. Dunn, M.R.C.V.S., who practises in Beverley is another example of the valuable work which a busy practitioner can undertake in public life.

The market was opened on December 16th by the Parliamentary Under-Secretary of the Ministry of Agriculture, Mr. G. R. H. Nugent, J.P., M.P., on the occasion of the Christmas Fatstock Show and in the presence of a large section of the farming community. A luncheon followed, when tributes were paid to Councillor Dunn and his Committee for their foresight and enterprise.

MINISTER'S MESSAGE TO THE AGRICULTURE INDUSTRY

The Minister of Agriculture, Fisheries and Food, the Rt. Hon. D. Heathcoat Amory, M.P., has sent the following telegram to the agricultural industry.

" My very best wishes for the festive season. Your efforts in continuing to provide over half the nation's food supply are a splendid contribution towards solving our balance of payments problems. We shall continue to support your successful progress.

" I wish you and all in the industry good health, good luck and successful farming in 1956. D. Heathcoat Amory."

Farming To-day: Antibiotics and Agriculture

THE following is the essential text of a broadcast given by Dr. W. S. Gordon after his return from an American conference on antibiotics and agriculture, sponsored by the National Academy of Sciences. It is reproduced by courtesy of Dr. Gordon and the B.B.C. :—

I was privileged to be an invited member of this conference which was sponsored by the National Academy of Sciences through its Agricultural Board and Research Institute. Forty-two research workers from 15 different nations were invited to present reviews or to sit on discussion panels. A general invitation was also extended to all interested persons both in the United States and other countries to attend the Conference and take part in the general discussion. After the scientific sessions were over we visited a number of Universities and Experimental Stations where we saw the work on antibiotics in progress. The vast and efficient industry of antibiotic production in America has to be seen to be believed, and as I saw those great developments my mind turned back to the early history of the discovery of antibiotics. In the story of man against microbes there is clear evidence of a steady search by microbiologists for substances which would have the selective action of killing invading germs within the body without causing irritation or severe reaction in the patient. In this search the antagonistic action of some germs against others, and of some fungi and plant products against some germs, has attracted attention from time to time. However, any anti-microbial substance found was usually not only toxic for microbes, but also for the patient.

The observation by Sir Alexander Fleming in 1929 that a culture of germs that had become accidentally contaminated by a mould from the air in his laboratory had been partially inhibited by the mould led to his discovery of penicillin. He made a culture of this mould and found that a by-product of its growth which he named penicillin, was non-irritant to wounds and non-toxic when injected into animals. This discovery has truly been a romance in science.

Advancement of Fleming's work might have lain fallow, but fortunately in 1940, 11 years after Fleming's original observations, Sir Howard Florey and his colleagues at Oxford made great efforts to produce and stabilise penicillin for the treatment of disease. Their success—now history—marks the entrance to a golden age in the treatment of disease in man and animals.

My recent visit to America has confirmed the opinion I had already formed from our own work in this country. I believe we are on the threshold of an age which will witness spectacular advances in the use of antibiotics in agriculture.

The antibiotics are a group of soluble substances that are produced by micro-organisms. They are characterised by their property of inhibiting at low concentration the growth activity or multiplication of other organisms. Antibiotic-like substances are also produced by some flowering plants and by some animals. It is perhaps fortunate that they occur in nature, otherwise man, animals and plants might have been destroyed, like rabbits with myxomatosis, by those unseen ferocious little micro-organisms that share our environment and way-lay us in our food and drink, in the air we breath, and in many other ways.

In recent years a new effect of antibiotics on body functions, namely that of improving the growth rate of most rapidly growing animals has been discovered. Again, as with the discovery of penicillin, this discovery was made accidentally, by a group of American workers in 1946 in the course of nutritional experiments with chickens. The importance of their discovery was probably masked by the fact that other growth-promoting factors in the diet were being studied. It became clear, however, in 1950 from the work of Jukes and his colleagues, and by the work of many others since, both in America, in Britain and other countries, that the growth rate of many animals and their food utilisation, is usually increased by adding relatively small amounts of antibiotics to the diet.

Research in America is now progressing at an enormous rate along three main lines, firstly in the measurement of the growth response and improvement of food conversion in all farm animals, poultry and turkeys from the cradle to the grave. Secondly, measurement of the effect of antibiotics in the treatment and prevention of plant and crop diseases and thirdly, measurement of the efficiency of antibiotics in prevention of bacterial spoilage of perishable foods such as meat, poultry, vegetables and fish.

I was amazed to learn that some 3,500 different antibiotic substances have been isolated and studied between 1942 and 1953, although the great majority were found not useful because of low potency or high toxicity—an average of one a year has proved to be useful. Those best known in this country are penicillin, streptomycin, aureomycin and terramycin, though there are also others which are in common use in medicine.

The subject is dynamic. It is moving at a great pace and the early indications are that we will hear more and more about the benefits to be derived from the supplementation of the food of young animals and also of children with antibiotic substances. Legislation is about to be introduced that will permit the immersion of broiler fowls in a weak solution of antibiotic after they have been dressed, because it has been shown that this will extend the keeping quality of the chicken by from 14 to 21 days. It has been shown experimentally that the carcases of cattle may also be preserved for much longer periods without affecting flavour when an antibiotic is injected into the animal at the time it is killed. Certain antibiotics have already been introduced as crop sprays for blight in fruit and beans and in combating bacterial diseases in certain other plants.

Such an extensive use of antibiotics requires constant observation to make sure that no adverse effects may result. Up to date no well-substantiated evidence of any adverse effect has been revealed, but one has to be careful not to be blinded by all the apparent benefits. There is still need for careful watch, though it must be said at the present time that the benefits appear to be considerable and the disadvantages hypothetical. Clearly America is a step ahead of Britain in the application of this knowledge but it is perhaps a comforting thought that if we travel the same way we will get due warning of any adverse effects that the wide-spread use of antibiotics in America may produce.

I cannot resist the temptation of saying that before the mode of action of antibiotic supplements in improving growth rate and food conversion was even partially understood, these substances were being added to the animal foods in America. The effect, fortunately, has been entirely beneficial. In Britain a more cautious approach has been made and the law at present only permits the addition of antibiotics to the rations of pigs and poultry. Approximately 15 to 20 per cent. of food for pigs and poultry now contain antibiotics whereas the figure in America is about 75 per cent.

In our work at Compton, we have shown for the first time that when certain antibiotics are added to the food at levels no higher than 16 to 32 parts per million of food, antimicrobial levels of the antibiotic can be detected in the blood, urine and bile. This provides an explanation as to why animals on such a diet may be more resistant to disease. Further, we have divided a large group of calves into two lots. One group received antibiotic in their milk and the other did not. Both groups were then exposed to the same risk of infection with white scour and there was a highly significant reduction in the incidence of infection in the treated versus the untreated calves.

From these experiments and others, I am becoming more and more convinced that the benefit to be derived from the addition of antibiotics at low levels to animal foods is due to the aid, given by the antibiotic to the natural defence mechanisms of the body, in resisting the invasion of micro-organisms, and in this sense they act as the preventers of growth deterrents rather than as growth promoters which is the present conception. This view stimulated much interest in Washington because the mode of action of antibiotics as dietary supplements is still a controversial question.

Current Literature

BOOK REVIEW

Fertility Pastures by F. Newman Turner. Published by Faber & Faber. Price 18s.

The theme of Mr. Turner's new book is not unfamiliar. What is, is good, and Mother Nature infinitely benevolent. We must distinguish between what is natural and what is unnatural and with the exception of a little doubt over the status of basic slag Mr. Turner has no difficulty in classifying the ingredients and components of agricultural practice into these categories. Simple ley mixtures lead to mineral imbalance, sterility and disease; inorganic fertilisers exhaust the soil and produce crops without true food value; compound feeding stuffs, inorganic mineral supplements and drugs are little better than poisons. The layman will find some difficulty in finding his way in and out among a host of half-truths. Similarly the agronomist will be puzzled by the underlying assumption that the maintenance of organic matter in the soil and the use of inorganic fertilisers are mutually exclusive alternatives though the author does claim the right to let emotion take the place of reason occasionally.

In this book a most attractive variant has been added to an old theme. Weeds, or herbs as the author prefers to call them, are so prolific that Nature must have intended them to fulfil some essential and useful purpose, and herbs having medicinal properties, what more elegant solution to the problems of animal health than to incorporate them in the composition of the ley? Though many of the arguments have a sectarian flavour it would be surprising if a practical farmer did not have useful experiences to pass on. The descriptions of methods of tripod haymaking, self feeding of silage and kale and of rotational grazing are readable and topical for whatever the motives for taking the cow to the food rather than the food to the cow, economic considerations will lead the principle to be more widely adopted. The effects on a heavy soil are demonstrated in photographs that must strike a chill horror in the heart of anyone who has farmed on a clay soil. It is disappointing to find that while Mr. Turner is sufficiently concerned about muddy udders to contemplate breeding a long-legged cow and " experimenting with washable plastic brassières for the cows," he gives never a thought to the effect of puddling and poaching on soil structure. It may be relevant that Mr. Turner has been on his present farm for only two years and does not appear to have remained a very great many years on the previous one. Perhaps it is for this reason that there is a noticeable reticence concerning cropping rotations, crop yields and other factual material. There is, however, much in this book that is interesting or entertaining while occasionally the reader may stumble across a veritable gem such as this sentiment about sheep's parsley: " It is my favourite raw snack when I'm out among the cattle grazing my leys; and I can rarely resist a refreshing nibble with them on a hot summer day." It is clear that Mr. Turner is prepared to practise what he preaches.

ABSTRACTS

Present Position of the Chemotherapy of Bacterial Infections.* GARROD, L. P. (1955). *Brit. Med. J., September 24th,* 1955. 756-758.

" No one will dispute that the ' present position ' of this subject is exceedingly complex. As the result of two major discoveries, the first of which—that of the sulphonamides—was made 20 years ago, an apparently unending series of potent new antibacterial drugs is being produced." The chronological sequence of the two main trends overlap, new sulphonamides and other synthetic compounds have

* Paper read to the joint Annual Meeting of the British Medical Association, Canadian Medical Association and the Ontario Medical Association in Toronto in 1955.

been introduced since the beginning of the antibiotic era. It is scarcely surprising that some of these drugs should have been neglected. There are very few people with definite and well-supported views about the relative merits of the later sulphonamides. Tests applied to sulphasomidine, sulphafurazole, sulphathiazole and sulphadimidine against four types of organism causing human urinary infection showed singularly little difference between them. It seems that *in vitro* test of one good sulphonamide is very like another.

Among the antibiotics, on the other hand, no two are alike, apart from the close similarity between the tetracyclines. For each there is a whole series of different indications, which can only be expressed adequately by a detailed table of bacterial sensitivities. It is far too much to expect the clinician to carry such a mass of information in his head and so a good deal of the use of antibiotics tends to be empirical.

There are preparations which in a given dose will exert an effect for a few hours, one to two days, four to five days, or two to three weeks. The blood levels attained vary inversely with the duration of the effect. For the treatment of everyday acute infections, the relative merits of freely soluble and depot preparations are still arguable.

The indications for antibiotic treatment have in human medicine been greatly complicated in recent times by the widespread development of bacterial resistance to some antibiotics.

Some important indications for antibiotic treatment can be described as immutable. The criteria for an immutable indication are (1) that the disease has a single microbial cause, (2) that the first condition of successful antibiotic treatment, that the infecting species is known, is satisfied merely by making a clinical diagnosis. Further, these organisms are either incapable of developing resistance to the antibiotic or are derived from reservoirs of infection where they have had no chance of doing so.

There are some conditions in which the effect of an antibiotic is unpredictable. First there are infections caused by a single organism in many of which the bacteriological diagnosis is self-evident, but there is an increasing frequency of strains resistant not only to penicillin but to the tetracyclines as well. Secondly, there are infections which have no constant bacterial cause. Mere treatment without laboratory aid is bound to be more or less empirical. Moreover, even when the cause is known, there is the difficulty that the strain may be resistant to the antibiotic chosen. The antibiotic to which resistance is most common is streptomycin, and next come the tetracyclines; fortunately abnormal resistance to penicillin is rarely seen in any organism except staphylococci. A great variety of gram-negative bacilli nowadays sometimes prove resistant to an antibiotic to which they used formerly to be sensitive.

The treatment, therefore, of non-specific infections should so far as is possible be based on the bacteriologist's findings. The proportion of antibiotic misuse has been put as high as 95 per cent. in the United States. Much of this lavish consumption is on undiagnosed cases, insusceptible infections, especially virus diseases, and on simple conditions which will resolve spontaneously. The objection to such prescribing is not merely that it is wasteful or that it hastens the widespread appearance of bacterial resistance; it is also that it can be positively and directly harmful.

In the human subject the most dramatic and disastrous of these side effects is the shock-like state, sometimes rapidly fatal, that can be produced by penicillin in sensitised patients. The best safeguard for the future is to limit the use of penicillin to proper indications. Streptomycin is toxic to the eighth nerve and is a heavy price to pay for the unnecessary use of this drug as is being encouraged by the marketing of proprietary mixtures of penicillin and streptomycin. If the renal function is impaired, excessive blood concentrations are attained and damage can be done in a short time. Chloramphenicol can cause marrow aplasia. The tetracyclines are hepatotoxic but only in excessive doses; the chief drawback to these drugs is their tendency to cause nausea and diarrhoea. These symptoms may be accompanied by superinfections with organisms such as *Candida albicans*.

There are differences of opinion as to the use of antibiotics as preventives of infection. The use of antibiotics as a safeguard against any possible claim for negligence has produced an intolerable position that therapeutic policy should be dictated by the fear of litigation.

The timing of the prophylactic use of antibiotics is important. If administration is begun some days before operation, a resistant flora may be established and the results will be disastrous. The object is to destroy bacteria entering the circulation at the time of operation, the first injection should therefore immediately precede the operation.

G. F. B.

Antibiotics in the Treatment of Chronic Respiratory Disease in Chickens. COVER, M. S. (1955). *Poult. Sci.* **34**, 686-690.

The author used four methods of treatment in the attempted control of three outbreaks of chronic respiratory disease (CRD) in chickens, involving about 18,000 birds. These treatments comprised the use of a soluble form of terramycin in the drinking water, and the parenteral injection of terramycin in oil, a mixture of bicillin and streptomycin and one of streptomycin and penicillin.

No significant difference was seen in the course of the disease, egg production or mortality between the various treated groups and the untreated controls.

E. A. G.

B.V.A. PLAQUE

With regard to the plaque recently erected in the entrance hall of the Association's headquarters, of which a photograph appeared in THE RECORD of December 10th, readers will learn with interest that the design was executed by a member of the profession, Mr. C. T. Murphy. As his friends well know, Mr. Murphy is an artist of talent, and the plaque is a permanent reminder of his skill.

In Parliament

Myxomatosis

Mr. Hurd asked the Minister of Agriculture, Fisheries and Food what consideration the Advisory Committee on Myxomatosis has given to the question of making it illegal to traffic in rabbits so as to reintroduce rabbits into areas which have been cleared by myxomatosis; and what action he proposes to take.

Mr. Amory: The Myxomatosis Advisory Committee consider that the restocking of land with wild rabbits should be made illegal. I am hopeful of early legislation on the subject.

Mr. Hurd: Can my right hon. Friend give an assurance that he recognises the extreme urgency of this matter—there are some clear areas which may be reinfested—and that he will at the earliest opportunity bring forward the necessary measures?

Mr. Amory: I entirely agree with what my right hon. Friend says on this matter. I understand that a private Member has introduced a Bill in another place with this object in view, and the Government will give immediate consideration to that Bill.

Mr. Hurd asked the Minister of Agriculture, Fisheries and Food if, in view of the risk that myxomatosis in mild form may become endemic among wild rabbits, causing lingering illness but not killing them, he will take the advice of the Advisory Committee on Myxomatosis on the desirability of amending the Pests Act, 1954, to allow the distribution of the most lethal strains of myxomatosis.

Mr. Amory: In view of the opinions expressed when the Pests Bill was before the House last year, I doubt whether any useful purpose would be served by referring the matter to the Myxomatosis Advisory Committee at the present time.

Mr. Hurd: Would my right hon. Friend take into account the very vast change in public opinion in the past year, and also recognise that, as we are likely to have myxomatosis for all time, he might as well make it fully effective and with as little cruelty as possible? Will he seek the views of the Advisory Committee on Myxomatosis?

Mr. Amory: I think that in its second report the Advisory Committtee on Myxomatosis said it would reserve judgment on this matter, but I will keep my ear as close to the ground as possible.

Dr. King: Is the Minister aware that in resisting this the most specious of a long line of specious reasons for introducing this most cruel and infectious disease, he will have the support of humane opinion throughout the country?

Mr. Hurd: Nonsense.

Fowl Pest

Mr. J. E. B. Hill asked the Minister of Agriculture, Fisheries and Food whether he will extend the system of fowl pest warning notices, which prohibit unauthorised traffic upon farm premises, so as to cover the potentially dangerous period before a suspected case of fowl pest can be either confirmed or negatived by the laboratory findings of the Animal Health Division.

Mr. Amory: My hon. Friend should now have received a letter from my hon. Friend the Joint Parliamentary Secretary explaining why we do not feel able to adopt this suggestion.

Mr. Hill: Whilst appreciating the practical difficulties, may I ask if the Minister is aware of the delay in diagnosis in difficult areas which now may last up to six days? Is my right hon. Friend aware that, on balance, in a very difficult question the opinion of responsible producers is in favour of further restriction?

Mr. Amory: I can only assure my hon. Friend that I want to take every reasonable step to stamp out this disastrous scourge. I think possibly we may reduce the period of the delay he has mentioned. I am attending to that matter straight away.

Mr. J. E. B. Hill asked the Minister of Agriculture, Fisheries and Food whether in combating fowl pest, he will make his control of movement orders effective and enforceable immediately upon publication.

Mr. Amory: I am examining the present arrangements to see to what extent they can be improved. I will certainly bear in mind my hon. Friend's suggestion.

Mr. Hill: Is the Minister aware that at the moment there is a lot of last-minute traffic before an order comes into force, which clearly can be a source of danger in spreading the disease?

Mr. Amory: I realise that that may be so, but at the same time I think one must be careful in any arrangements one makes to be as sure as possible that they will conduce towards the object we have in mind and not weaken what we want above everything else—the encouragement of early notice of a suspected outbreak.

Mr. Dye asked the Minister of Agriculture, Fisheries and Food in how many cases his officers have visited small poultry-keepers in Mattishall, Norfolk, in order to take blood tests of their poultry, when no suspected case of fowl pest had been reported, and with negative results.

Mr. Amory: Fifty-one premises in Mattishall where fowl pest was not definitely suspected were visited by my officers, who took 394 blood samples. In one case the subsequent test gave positive results, and fowl pest has been confirmed, and another is still under investigation. The remaining 49 tests were negative.

Mr. Dye: Is not the position then that the officials dealing with this matter are spending a lot of time looking after domestic poultry-keepers and have left the stable door wide open for the big ones, and the consequence is that, fowl pest is now spreading right throughout the country. Does he not agree that it would have been better for those people to have been engaged in other directions?

Mr. Amory: Before I could agree with the hon. Gentleman, I should require the details of what the hon. Gentleman means.

Mr. Alport asked the Minister of Agriculture, Fisheries and Food what further outbreaks of fowl pest there have been in north-east Essex since the introduction of the present standstill order.

Mr. Amory: Since December 2nd, when the Essex standstill Order came into force, five outbreaks of fowl pest have been confirmed on premises in the north-east of the county.

Mr. Alport: May I ask my right hon. Friend what other considerations his Ministry bears in mind when deciding to end a standstill Order? Does an area have to be completely free from disease, and, if so, for what period of time?

Mr. Amory: It is very difficult for me to give a specific answer. We have to use our judgment as to when the improvement has reached a point at which it will be safe to remove these very onerous restrictions.

Field Station, Compton

Mr. Grant-Ferris asked the Minister of Agriculture, Fisheries and Food, as representing the Lord President of the Council, if he will give an assurance that the funds available or allocated for the present work on expansion of the Animal Health Research Centre, Compton, Berkshire, will be fully maintained.

Mr. Amory: I am informed by the Agricultural Research Council that the present level of expenditure on their field station at Compton represents the minimum which they intend to maintain. The provision of funds for the further expansion of the station is at present under consideration.

Mr. Grant-Ferris: Could my right hon. Friend inform his noble Friend the Lord President of the Council that this answer will give great satisfaction to the agricultural interests concerned, especially to those sheep breeders who, through this terrible disease of scrapie, have lost the whole of their exports?

Mr. Amory: I will see that my hon. Friend's remarks are brought to the attention of my noble Friend.

Horses (Imports from Ireland)

Mr. Chapman asked the Minister of Agriculture, Fisheries and Food the number of live horses imported from Northern Ireland and the Republic of Ireland, since the introduction of the Horses (Landing from Northern Ireland and the Republic of Ireland) Order, 1954; how many were found on examination to be unfit to continue their journey, and had to be rested; and how many had to be slaughtered on the advice of the veterinary inspectors.

Mr. Amory: From June 25th, 1954, when the Order came into force, until December 3rd, 1955, 1,382 horses were landed from Northern Ireland; of these 50 were found to be unfit to continue their journey and were detained for a period; none had to be slaughtered. From the Irish Republic, 8,795 horses were landed of which 258 were detained for a period and 69 were slaughtered on veterinary advice.

News and Comment

PRESENTATION TO DR. RUSSELL GREIG

On behalf of the directors of the Animal Diseases Research Association's Moredun Institute a presentation was made on December 15th to Dr. J. Russell Greig, who retired some little time ago after many years as the Institute's principal.

In the course of his speech, Mr. G. C. Mercer, who made the presentation, referred to the honour recently conferred on Dr. Russell Greig when he had received the honorary Fellowship of the North American Veterinary Medical Association.

The presentation took the form of a bronze statuette of a border shepherd, sculpted by Mr. Andrew Dods, which symbolised, as was said, the great work of Dr. Russell Greig personally, and of the Institute as a whole. A set of Chambers's Encyclopaedia was presented also.

UNIVERSITY NEWS

Edinburgh

At a Graduation Ceremonial held on December 16th, the following Degrees were conferred by the University of Edinburgh:—

B.Sc. in Veterinary Science

John Norman Gripper, M.R.C.V.S., Leslie Major Kirkbride, M.R.C.V.S., Oliver Michael Gerald Murphy, A.F.C., M.A. (Cantab.), M.R.C.V.S., and Anthony David Weaver, M.R.C.V.S.

All four graduates qualified M.R.C.V.S. at the R.C.V.S. Examinations held at the Royal (Dick) School of Veterinary Studies this month.

THE VETERINARY SECTION OF UFAW

The Annual General Meeting of the veterinary section of UFAW was held on September 29th, 1955, at Westham House, near Warwick, and was attended by members of the profession and students. The meeting was addressed by the President-Elect, Dr. N. S. Barron, whose subject was "A Review of Progress made in Animal Management in Recent Times." Dr. Barron traced the developments in animal husbandry from the Middle Ages to the present day, with special reference to cattle, pigs and poultry, and questioned whether the present-day trend towards greater concentration of domestic animals was, in fact, progress. He pointed out that the increasing demand for more food might lead to greater stress being put on increased production than on the welfare of the individual animal.

After discussion, the Chairman, Mr. Keith Evans, proposed a vote of thanks to Dr. Barron which was carried with acclamation.

The Secretary read the report for 1954-5 and this was followed by discussion of proposed activities for the coming year. Officers were elected for 1955-6 as follows:—

President, Dr. N. S. Barron, M.R.C.V.S.; *President-Elect*, Mr. G. C. Knight, F.R.C.V.S.; *Hon. Secretary*, Miss D. N. Egginton, M.R.C.V.S.; *Student Chairman*, Mr. J. P. Volrath (Royal Veterinary College); *General Secretary*, Miss M. P. Williams, B.SC. (Econ.)

Among various subjects discussed under "Other business" were: the transport of livestock, proprie-

tary veterinary medicines, the use of prussic acid alone for the destruction of cats and dogs, the risk of increasing ill-health among dogs bred to conform to show standards, and the castration of lambs. Discussion took place on the use of inhumane methods of destruction, including strychnine. It was agreed that the Section should endorse the suggestion of the B.V.A. that proprietary medicines for veterinary use should be investigated and reported upon, in order to reduce the risk of their injudicious use.

FOOT-AND-MOUTH DISEASE

Foot-and-mouth disease was confirmed among cattle at Shelton, Notts, on December 16th. An area extending for approximately 10 miles around the infected premises has been declared to be an Infected Area. Details are as follows:—

In the county of Leicester, Petty Sessional Division of Belvoir

The parishes of Bottesford, Redmile, Stathern, Eaton and Belvoir and so much of the parish of Croxton Kerrial as lies to the north and west of the main road A.607 running from Grantham to Melton Mowbray including the said road.

The parishes of Halam, Southwell, Upton, Halloughton, Fiskerton cum Morton, Thurgarton, Bleasby and Hoveringham and so much of the parish of Hockerton as lies to the south and east of the road running from Kirklington to Winkburn excluding the said road.

Restrictions on the movement and marketing of livestock in the infected area around Princethorpe, Warwicks, were withdrawn as from December 16th. The outbreak in this area involved the slaughter of 151 cattle, 57 sheep and eight pigs.

FOWL PEST—EXTENSION OF SCHEDULED AREA

In view of the occurrence of numerous outbreaks of disease at places outside the previous scheduled area of Norfolk, it has been decided to extend that area. The new scheduled area, as from December 14th, is as follows:—

The Administrative County of Norfolk, the city and County Borough of Norwich, and the County Borough of Great Yarmouth.

In the County of East Suffolk, Petty Sessional Division of Mutford and Lothingland, the parishes of Burgh Castle and Bradwell.

Investigations and tracings of suspected poultry sold at Hereford Markets during November have disclosed that large numbers of the birds were resold subsequently by a poultry keeper and dealer through Carmarthen and Llandilo Markets. The poultry have been distributed in south-west Wales, principally in Carmarthenshire. Some hundreds of small consignments are involved. In the circumstances it has been decided to include the counties of Cardigan, Carmarthen and Pembroke in the scheduled area affected by the present "Standstill" restrictions. A new Order which substitutes the area specified below for that formerly described came into effect on December 17th.

The Administrative Counties of Brecknock, Cardigan, Carmarthen, Glamorgan, Hereford, Monmouth, Pembroke and Radnor. The City and County Boroughs of Cardiff and Gloucester. The County Boroughs of Merthyr Tydfil, Newport and Swansea.

In the County of Gloucester, the Petty Sessional Divisions of Coleford, Gloucester, Lydney, Newnham and Newent.

ADVISORY COMMITTEE ON EXPORT OF CATTLE SEMEN

The Minister of Agriculture has appointed an advisory committee to consider applications for licences to export cattle semen, to which practice objection has been made by breed societies. The Committee will be required to consider the applications in the light of the Government's policy to permit exports of cattle semen where they are likely to maintain the reputation of British livestock and to advise the Minister whether licences should be granted.

The Chairman of the Committee is Sir John Barlow, BART., M.P., and the other members are:—

Mr. E. J. Boston, President of the National Cattle Breeders' Association; Mr. T. F. Bradstock, Member of the Council of the Hereford Herd Book Society; Mr. P. Sutcliffe, Chairman of the board of management of the Dartington Hall Cattle Breeding Centre and Mr. F. Vincent, Chairman of the Milk and Dairies Committee of the National Farmers' Union.

The Secretary of the Committee is Mr. V. F. Wood of the Ministry of Agriculture.

PERSONAL

Births

SLADDEN.—On December 12th, 1955, at Raigmare Hospital, Inverness, to Maureen (*née* MacLellan) wife of Ian E. T. Sladden, M.R.C.V.S., of Portree, Isle of Skye, a daughter, sister for Timothy.

CAMERON.—On December 14th, 1955, at the Royal United Hospital, Bath, to Norah (Ann), wife of John Cameron, B.SC., M.R.C.V.S., D.V.S.M., 49, Englishcombe Lane, Bath, a son.

COMING EVENTS

December

29th (Thurs.). Annual Dance of the V.V.B.F. Ladies' Guild, Dumfries and Galloway Division, in the Cairndale Hotel, Dumfries.

January, 1956

5th (Thurs.). General Meeting of the Central Division, B.V.A., at the Royal Veterinary College, Camden Town, N.W.1, 6 p.m.

6th (Fri.). Annual Dinner and Dance of the North Wales Division, B.V.A., in the Imperial Hotel, Llandudno, 7 p.m.

Sixteenth Ordinary General Meeting of the A.V.T. and R.W.s at the Royal Veterinary College, Camden Town, N.W.1, 10 a.m.

11th (Wed.). General Meeting of the Lancashire Division, B.V.A., at the Queen Hotel, City Road, Chester, 2.30 p.m.

February

10th (Fri.). Annual Ball of the Glasgow University Veterinary Medical Association in the Rhul Restaurant, Sauchihall Street.

17th (Fri.). Annual Ball of the Royal (Dick) School of Veterinary Studies in the Assembly Rooms, George Street, Edinburgh, 8.30 p.m.

22nd (Wed.). Second Meeting of the A.V.T. and R.W's. Scottish Regional Group for the 1955-56 session in the Moredun Institute, Edinburgh, 2.15 p.m.

B.V.A. COUNCIL AND COMMITTEE MEETINGS IN LONDON

Wednesday, January 18th, 1956

10.30 a.m.—Home Appointments Committee, at 7, Mansfield Street, W.1.

12.00 noon—Parliamentary and Public Relations Committee at 7, Mansfield Street, W.1.

2.15 p.m.—Organising Committee, at 7, Mansfield Street, W.1.

Thursday, January 19th, 1956.

10.00 a.m.—Veterinary State Medicine Committee, at 7, Mansfield Street, W.1.

12.00 noon—Finance Sub-committee, at 7, Mansfield Street, W.1.

2.15 p.m. General Purposes and Finance Committee, at 7, Mansfield Street, W.1.

Friday, January 20th 1956.

10.30 a.m.—Meeting of Council at Connaught Rooms, Great Queen Street, W.C.2.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Aberdeen. Lawsie Farm, Crathie, By Ballater (Dec. 10).

Angus. Flemington Farm, Aberlemno, Forfar (Dec. 14).

Ayr. Gatehead Farm, Beith (Dec. 10).

Dorset. Longclose Farm, Pamphill, Wimborne (Dec. 12).

Durham. Cliffords House Farm, Quebec (Dec. 12).

Lanarks. Meadowhead Farm, Plains, Airdrie (Dec. 10).

Lancs. Roach Bridge Farm, Roach Bridge, Samlesbury, Preston (Dec. 9).

Salop. Holly Bank, Cruckton, Shrewsbury (Dec. 14).

Sussex. Norwood Cottage Farm, Graffham, Petworth (Dec. 15).

Yorks. South Widdale Foot Farm, Hawes (Dec. 15).

Atrophic Rhinitis

Leics. Hall Farm, Gaddesby, Leicester (Dec. 12).

Foot-and-Mouth Disease

Notts. Shelton Lodge, Shelton (Dec. 16).

Fowl Pest

Berks. Bearwood Close, 178, Bearwood Road, Wokingham (Dec. 13).

Brecon. Llwywderi, Llangynidr, Crickhowell (Dec. 14); Bailey Helig and Bryn Deri, Penderyn, Aberdare; Wernlan, Penderyn (Dec. 15).

Carmarthen. Tirydail, Ammanford; Hope Poultry Farm, Llandilo (Dec. 15).

Essex. Bulvan Stores, Bulpham, and Garlesters Farm, Bulpham, Upminster (Dec. 14).

Glamorgan. Maerdy Farm, Rumney, Cardiff; 1, Jenkins Road, Cimla, Neath (Dec. 13).

Hereford. Wormbridge Court, Wormbridge (Dec. 13); Tretrie Farm, St. Owens Cross, Hereford; Tan House, Longtown; Gworlodyfain, Craswall (Dec. 14).

Lancs. Mill House, Moss House Lane, Much Hoole, Preston; Thornlea Brook Farm, Alt, Oldham (Dec. 13); The Laurels, Great Eccleston, Preston (Dec. 15).

Middx. 61, Park Avenue, Ruislip (Dec. 15).

Monmouth. Twyn Farm, Clytha, Abergavenny; Pantybellan, Llanvair Kilgeddin, Raglan; Veddow, Coldbrook, Abergavenny, Upper House, Fwthog, Forrest Coal Pit; Werngochen, Cwmcarvan; Coed Morgan Farm, Llanddewi Rhydderch, Abergavenny; Werngifford Farm, Llanfihangel-Crucorney, Abergavenny; Waun Pound, Sirhowy, Tredegar; Court Llacca, Llanvihangel-Crucorney; Castle Cottage, Monmouth Road, Raglan; 3, Holding, Llanddewi Court, Llanddewi Skirrid; Twyrelas Farm, Tredegar; Trybor Farm and Sunny Mount, St. Maughans (Dec. 13); Pantygoioa, Llantilo, Crossenny (Dec. 14); Newbolds Farm, Monmouth; The Lade, Skenfrith; 8, Old Barn Way, Abergavenny; Fair View, Usk Road, Raglan; The Dairy Farm, Penrhos, Raglan; 31, Abertillery Road, Blaina; Park Cottage, Victoria; 11a, Old Woodland Terrace, Aberbeeg, Abertillery (Dec. 15).

Salop. 1, Ashford Bank, Claverley, Wolverhampton (Dec. 14); New Park Farm, Neentox, Bridgnorth; 1, Council Holding, All Streeton, Church Streeton (Dec. 15).

Staffs. 5, Mill Lane, Wednesfield, Wolverhampton (Dec. 13); Carlton House Farm, Off Mount Road, Wolverhampton (Dec. 15).

Sussex. Davis Land, Rye Harbour, Rye (Dec. 14).

Swine Fever

Derby. Slayley Hill Farm, Clowne Common, Chesterfield (Dec. 12).

Devon. Sandcomb Farm, Sidbury, Sidmouth (Dec. 12); Offwell Barton, Offwell, Honiton (Dec. 15); Waie Farm, Zeal, Monarchorum, Crediton (Dec. 16).

Dorset. Malmpitts Farm, Shaftesbury (Dec. 12); Chilbridge Farm, Pamphill, Wimborne (Dec. 15).

Glamorgan. Dolgoed, Grovesend, Swansea (Dec. 12).

Kent. Homestead Farm, Ashley, Dover (Dec. 16); Court Farm, Luddesdown, Gravesend (Dec. 17).

Lanarks. Mossend Farm, Bellshill (Dec. 15); No. 4, Holding, 109, Garthamlock Road, Glasgow (Dec. 17).

Lancs. Poulton Hall Farm, Poulton-le-Fylde, Blackpool (Dec. 12).

Middx. Hithermore Farm, Stanwell Moor, Staines (Dec. 15).

Staffs. Rose Cottage, Kerry Hill, Bucknall, Stoke-on-Trent (Dec. 12).

Yorks. Rockhill Farm, Brownhill Road, Batley; 57, Cliff End Road, Longwood, Huddersfield; Upper Brow Road, Paddock, Huddersfield; 12, Wren Street, Paddock, Huddersfield (Dec. 12); Mount Pleasant, Kippax, Leeds (Dec. 16).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

THE REGISTER OF VETERINARY SURGEONS

Sir,—As from 1854, at least, until 1954, obituary notices of deceased members of the Royal College of Veterinary Surgeons have been published in successive editions of the Register. In editions previous to 1881 the name of a deceased member was inserted for one year in the alphabetical Register, the name being printed in italics. The Veterinary Surgeons' Act, 1881, called for a "live" register; since then provision has been made for publication of an Obituary List among the appendices.

Attention is now drawn to the 1955 Register and the Supplementary Veterinary Register. In this edition the time-honoured custom mentioned above, which by usage has virtually become established in principle and practice, is continued, and rightly so. The continuation, however, applies to the Supplementary Veterinary Register only (page 350).

The absence of an obituary list of deceased Members of the Royal College of Veterinary Surgeons is notable and, may I say, regrettable.

On pages 424, 425 and 426 of the same edition, under the heading "Removals from the Register from all causes, 1945-1955," it is intimated that the names of 120 former members have been removed from the Register. Neither here nor elsewhere in the Register is it indicated whether each person's name was removed on notice of his death, at his own request by his default, or erased on being found guilty by trial of conduct disgraceful in a professional respect. In other words, under a very general epitaph, which implies curt dismissal, 47 deceased members are, together with 75 living persons, cast into common oblivion, their shroud our self respect.

Let it be clearly understood that the Council of the R.C.V.S. is not bound to publish other than a lawful "live" Register. Concerning obituary notices it may be said that by-law 36 applies: "At each quarterly meeting of the Council the Registrar shall read over the names of the Members . . . whose deaths have been authenticated, during the quarter"—such is *lex scripta*. But the laws of respect and of affection may, and often do, take cognizance of traditional principles and practices.

We are not in a position to ask why such traditional respect has not been paid to these 47 former members—we can only wonder.

Yours faithfully,

GEORGE DYKES.

100, Bothwell Street,
Glasgow, C.2.

December 7th, 1955.

In this connection it should be noted that the permanent staff of the Royal College keep THE VETERINARY RECORD regularly informed of the deaths of members of the profession, and obituary notices are published, together with appreciations when information is available.—*Editor.*

FEEDING OF FARM ANIMALS FOR HEALTH AND PRODUCTION

Sir,—I have read recently the proceedings of the Conference on the Feeding of Farm Animals for Health and Production issued by the Association.

A conference of members of the B.V.A. with an almost equal proportion of representatives of firms within the Animal Feed-stuffs Industry, at which papers were read by several experts not within the profession, indicates the awareness of veterinarians to the leadership we can give by co-operation with those in other professions and trades connected with agriculture.

Surely the Conference was an indication of confidence in our ability to play a major part in the full sphere of animal industry, and not to confine ourselves only to disease. Professor Robertson's opening address might, with advantage, be studied in detail by many veterinarians. Then it would be hoped that more emphasis be given throughout the world for our profession to play a major rôle in animal industry.

Yours faithfully,

R. A. AYRE-SMITH.

Department of Veterinary Services,
Experimental Station,
P.O. Box 25, Naivasha,
Kenya.

December 11th, 1955.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th November, 1955		57	—	—	49	—	50
Corresponding period in	1954	23	—	—	29	—	49
	1953	17	—	5	35	—	73
	1952	119	—	1	7	—	21
1st January to 15th November, 1955		687	6	6	514	—	1,274
Corresponding period in	1954	280	4	12	659	—	1,294
	1953	545	—	34	825	—	2,509
	1952	961	—	495	206	1	764